i-MapNJ DEP

Tutorial for New Users

New Jersey Department of Environmental Protection

Bureau of Geographic Information Systems

Trenton, New Jersey

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Introduction

Overview

NJDEP has regulatory standards and statutory responsibilities to: protect water and natural resources; provide the highest scrutiny in environmentally sensitive regions, and streamline the review of regulated activities. With i-MapNJ DEP, a unique easy-to-use application, users can view and query the best of the NJDEP's Geographic Information System (GIS) data. Homeowners can find out what's in their backyard; environmental organizations, planners, realtors, and builders can identify open space, various regulatory boundaries, sensitive lands, watersheds, and much, much more. The i-MapNJ DEP application updates the GIS layers found in the other NJDEP i-MapNJ applications including, i-MapNJ NJEMS. (The i-MapNJ DEP application does not provide a link to the NJEMS enterprise NJDEP database. The enhancement of this function is planned for a later release of i-MapNJ.)

Access to i-MapNJ DEP is through the home page of NJDEP BGIS web site at http://www.nj.gov/dep/gis. Click on Interactive Mapping and then i-MapNJ DEP.

Desktop GIS software does not need to be installed on the user's PC to run the i-MapNJ DEP application. All that is needed is a web browser. This application performs more reliably in Microsoft's Internet Explorer and it is recommended that users view the application using version 5.x or higher

The purpose of this tutorial is to provide an easy to follow guide allowing new users to become familiar with the application's basic capabilities and functionality. Elements of the application to be covered include:

- **Launching the i-MapNJ DEP application**
- **i-MapNJ DEP User Interface Components**
- **Finding a Location (point) of Interest**
- **Printing a Map**
- **Help Information**

The tutorial is divided into sections where these topics are explained, followed by an exercise demonstrating the functionality. Included also are screen shots to provide additional clarity.

For users that wish to explore interactive mapping further, go to the NJDEP GIS website (http://www.nj.gov/dep/gis) and click on "**Interactive Mapping"**.

Chapter 1

Getting Started with i-MapNJ DEP

And the User Interface Components

1.1 Getting Started

The application can be accessed from the i-MapNJ DEP splash page. A link to the splash page can be found on the NJDEP BGIS web site: http://www.nj.gov/dep/gis under Interactive Mapping.

The i-MapNJ DEP application is referred to as i-MapNJ throughout this document. The splash page for the i-MapNJ application provides a basic introduction to the application and useful links. Included is a tutorial link, which takes the user to the i-MapNJ tutorial (this document) and a tutorial for the Landscape project. The tutorial documents can be saved or printed to provide guidance for new users.

After launching the application the user should see the i-MapNJ user interface.

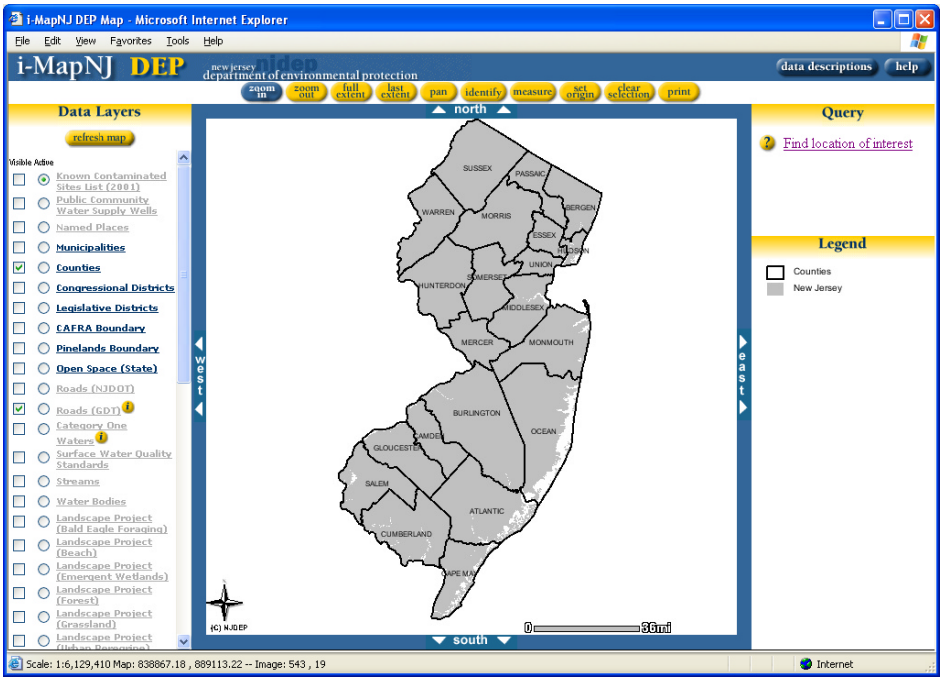

Figure 1-1. i-MapNJ DEP application user interface

The user interface consists of the Map View Frame in the center, the Map Tool Buttons above the Map View Frame, the Data Layers List that lists the data layers to the left of the Map View Frame, and the Query and the Legend Frames to the right of the Map View Frame. Query results are displayed in a pop-up box. The refresh button is just under the Data Layers title bar at the top of the Data Layers List.

1.2 User Interface Components

1.2.1 Map View Frame

The Map View Frame contains the view where the map graphics will be rendered. These include the visible GIS data layers, the scale bar, and the north arrow. The application displays any combination of GIS data layers in Map View Frame at a user chosen location and displays the results of the query "Find location of interest" by the user.

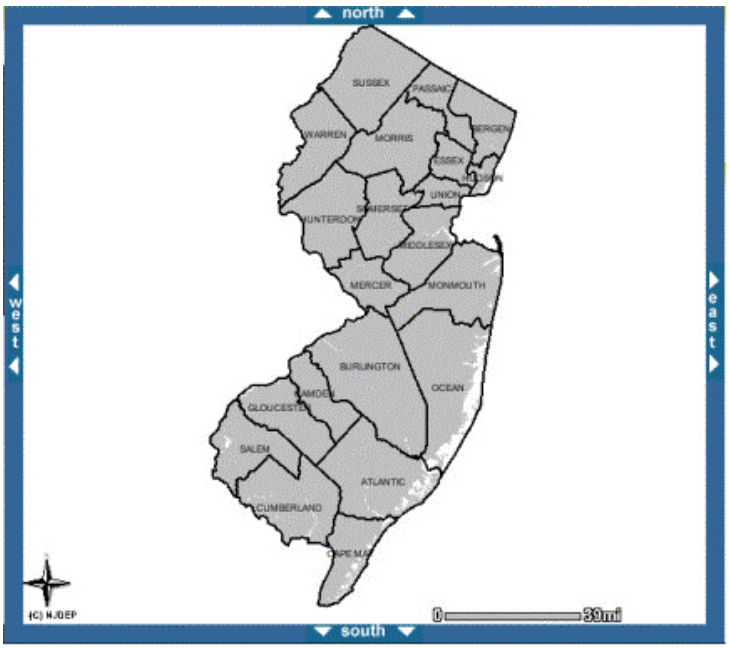

Figure 1-2. i-MapNJ DEP application Map View Frame.

1.2.2 Data Layers List

The Data Layers list is along the left side of the Map View Frame. There are over 40 GIS data layers available for viewing in this i-MapNJ application. Data layers can be made "visible" in the Map View Frame by checking their respective checkboxes in the Data Layers List and clicking on the **refresh map** button refresh map, found at the top of the Data Layers List. Users may turn on as many data layers as they wish, however the map can become difficult to read if too many are visible at the same time.

Data descriptions for each layer may be accessed by clicking on the data layer's name. Clicking on the "data description" button data descriptions on the upper right banner of the application and then choosing a layer will also display the description. A hyperlink to the Full Metadata is at the end of each description.

Note that not all data layers are available to the user all of the time. GIS data layers in the i-MapNJ application have scale dependencies allowing them to be available for display only at defined scales. Some data layers are available at large scales (zoomed in) but not available at

small scales (zoomed out). GIS data layers that are available at any particular scale are highlighted (in dark blue) in the Data Layers List. Those layers that are not available for viewing are not highlighted (grayed out).

As a user zooms into a smaller and smaller area, the highlighted (available) layers and the grayed out (unavailable) layers will change. As the user zooms in and out these relationships change and hence the layers available for view and query change. Generally, as the user zooms in, more layers are available as in Figure 1-3.

Figure 1-3.Several layers, such as the Aerial Photos 2002 layer, are only available at larger map scales (i.e., when zoomed to a smaller area).

While many GIS layers can be displayed at one time, the user can only designate one GIS layer as the ***active*** layer, available for query. A user can set the active layer by clicking on the layer's corresponding radio button. The radio button is next to the listed data layers and is round. To activate it, click in the center of the circle. Some of the GIS toolbar tools act only on the active layer. For instance, if the user wants to use the ***identify*** tool identify to find out some information on a segment belonging to the streams data layer, they must first set the streams layer as the active layer before they use the identify tool.

The entire list of GIS layers available in the application includes those listed in Table 1.1.

- **Aerial Photos 1995/97**
- **Aerial Photos 2002**
- **CAFRA Boundary**
- **Category One Waters**
- **Congressional Districts**
- **Counties**
- **Deed Notice Areas**
- **Groundwater Contamination Areas (CEA)**
- **Groundwater Contamination Areas (CKE)**
- **Impervious Surface % (1995)**
- **Know Contaminated Sites List (2001)**
- **Land Use 1986**
- **Land Use 1995**
- **Land Use Change 1986-1995**
- **Landscape Project (Bald Eagle Foraging)**
- **Landscape Project (Beach)**
- **Landscape Project (Emergent Wetlands)**
- **Landscape Project (Forest)**
- **Landscape Project (Grassland)**
- **Landscape Project (Urban Peregrine)**
- **Landscape Project (Wetland Forest)**
- **Landscape Project (Wood Turtle)**
- **Legislative Districts**
- **Municipalities**
- **Named Places**
- **New Jersey**
- **Open Space (State)**
- **Pinelands Boundary**
- **Public Community Water Supply Wells**
- **Quarter Quads**
- **Roads (NJDOT)**
- **Roads (GDT)**
- **Soils (ITU)**
- **Soils (SSURGO)**
- **State Plan Centers**
- **State Planning Areas**
- **Streams**
- **Sub-Watersheds (HUC14)**
- **Surface Water Quality Standards**
- **Water Bodies**
- **Watershed Management Areas**
- **Watersheds by Name (HUC11)**
- **Well Head Protection Areas**
- **Well Program Grid**

Table 1-1. The GIS data layers in the Table of Contents.

1.2.3 Legend

The map Legend is always available in the lower right column, below the Query.

The Legend displays the names of any data layers that are turned on (visible) and the symbols or shade patterns associated with the data layers. The symbols and shade patterns associated with the data layers in i-MapNJ DEP cannot be changed by users.

1.2.4 Map Tools Toolbar

The Map Tools Toolbar, above the Map View Frame allows users to perform some basic but useful GIS analysis. The following table (Table 1.2) summarizes the function of each tool:

Button	Toolbar Name	Toolbar Description
	**Zoom In**	Zooms in on the position clicked on or the box dragged on the map.
	**Zoom Out**	Zooms out on the position clicked on or the box dragged on the map.
	**Zoom to Full Extent**	Zooms to the full extent of the map.
	**Previous Extent**	Zooms to the last previous extent. Inactive until user changes extents.
	**Pan**	Pans the map as the user drags the pointer across the map.
	**Identify**	Allows the user to click a feature from the active data layer, and view the descriptive tabular data associated with the feature.
	**Measure**	Allows a user to measure distances on the rendered map.
	**Set Origin**	Selects a point from which to query from the Query Menu.
	**Clear Selection**	Clears the selected group of features from the active data layer.
	**Print Map**	Enables the user to produce a basic map layout in an HTML page that can be sent to a printer
	**Data Descriptions - Metadata**	Allows a user to access short abstracts about the data layers, and full metadata (how the layers were produced) if desired. May also contain internet links to more information.
	**User Help**	Enables access to user help topics.
	**Information**	Displays **important** information about that particular data layer.
	**Refresh Map**	Refresh map redraws the Map View Frame based on choices you have made in the visible data layers, active layer or because of a new query.
	**Context sensitive Help**	Enables users to access help topics from the pop-ups.
	**Pan North**	Moves the map north.
	**Pan South**	Moves the map south.
	**Pan West**	Moves the map west.
	**Pan East**	Moves the map east.

Table 1.2. i-MapNJ Map Tool Functions

1.2.1 Query Frame

The Query Frame has one query or question to the right of the Map View Frame. The Query gives the user a quick start to finding an area in the state to zoom into quickly. When the user clicks on, “Find location of Interest,” a frame pops up with four choices, Address, Coordinates, County, Municipality. To make a choice click the appropriate radio button and proceed.

1.2.5 Data Descriptions and Help

The Data Description button 

is found in the upper right hand corner of the application, just above the Query Frame. By clicking on this button, a pop-up window appears with a list of all the data layers found in the Data Layers List. Each data layer name is hyperlinked to a paragraph that gives a definition of what each particular data layer represents. This is a limited description. To find out more information about each layer, click on the full metadata 

hyperlink found at the end of each description.

Full metadata gives a standard Federal Geographic Data Committee (FGDC) description of each layer. The format of each FGDC metadata record is the same and gives the user important information including Identification Information, Data Quality Information, Spatial Data Organization Information, Spatial Reference Information, Entity and Attribute Information, Distribution Information, and Metadata Reference Information. To learn more about FGDC metadata, go to http://www.fgdc.gov/.

Click on the 

button in the upper right had corner of the application. The i-MapNJ Help Topics window opens, providing a list of topics the user may view. By selecting among the help topics the user can find information on procedures to perform specific activities and view frequently asked questions. There is also context sensitive help 

in strategic places in the application to provide pertinent information to the current window.

Each GIS data layer in the application is generally available for download as a shapefile if the user would like to have a personal copy to use in GIS software. Go to: http://www.nj.gov/dep/gis and click on Downloads.

1.2.7 The Information Button

In addition to the map tools at the top of the view frame, users will notice an  button next to certain GIS data layers in the Data Layers List. **This information button highlights an important data quality issue that all users should understand before viewing the data** in the i-MapNJ application. Please take time to read these important notes.

1.2.8 Tabular Data (Results) Window

The tabular data window is a pop-up window that displays data records from the active GIS data layer in response to a user query. This window is not visible to the user initially but appears as the result of several user actions. To designate the active layer to query, activate the radio button for that layer by clicking it. Only one GIS layer may be active at a time.

Performing an ***identify*** tool 

query on a feature belonging to the active layer will result in a pop-up window "Query/Selection Results". The record(s) displayed will correspond to the features near the location clicked on in the Map View Frame. Tabular data for each GIS data layer will be specific for that layer. A result window may look like Figure 1-4, the result of a query on the GIS layer Open Space.

Figure 1-4. Tabular Data Window

Chapter 2

Using the Query Frame Question

2.1 Query: Find Location of Interest

The defined searches for finding a point to investigate in the i-MapNJ DEP application are found by clicking on the Query "**Find Location of Interest**." You can find your location of interest by street address, coordinate, county, or municipality. A location of interest can be any point in the state such as a home, a facility, a municipality or any point that you are interested in viewing.

2.1.1 Find Location of Interest: by Address

The Address Search is designed to retrieve or locate a point representing a single address. The address can be any valid street address that the application can locate in the GIS street file. A user may be very interested in locating where they live or have an interest in a property for which they know the address. Another user might be interested in seeing how close they live to a Category One Waters. Using the i-MapNJ application, the user can attempt to find this location. The following example demonstrates how to perform this search.

Select Query "Find Location of Interest" from the Query Frame.

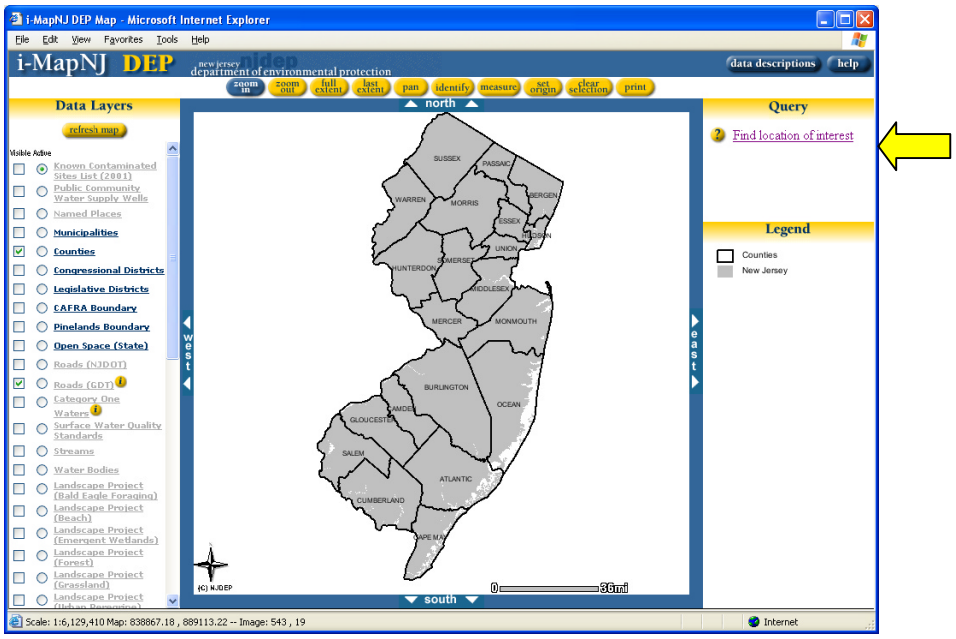

Figure 2.1 Find location of interest

The application provides a window with the three options for finding a location. Select "address" by clicking the radio button next to it. The window will change and display address fields in which the user may enter an address. Only the house number, street, and zip code are required.

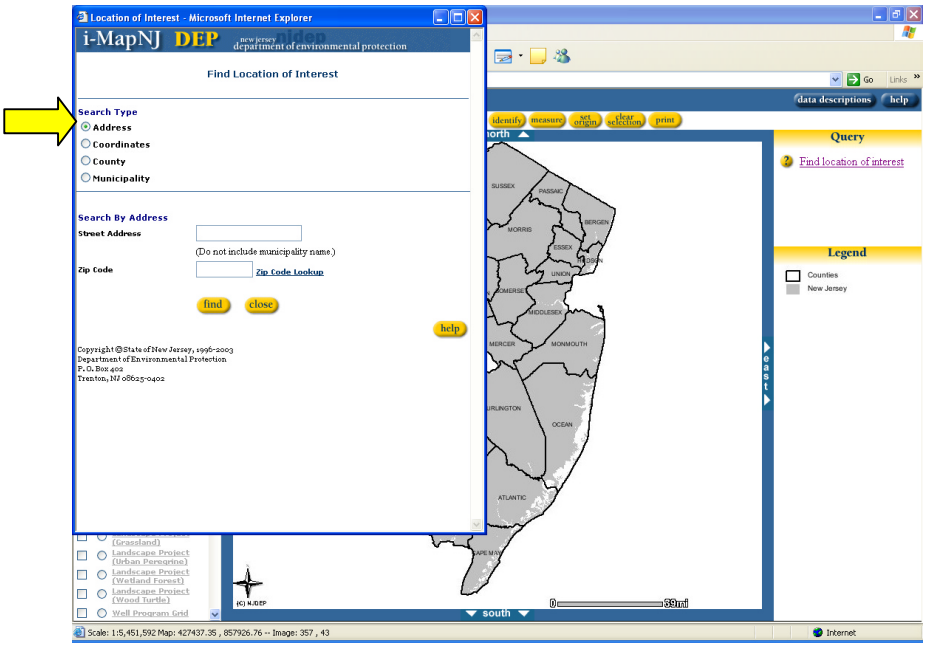

Figure 2.2 Click the radio button for Address and enter the house number, street and zip code.

Number ranges are coded to the road segments that make up the GIS roads layer and are used as the basis to estimate the location of the address entered. The *Address Match Candidates* pop-up window will appear and indicate to the user whether there was a successful match.

If a single match was found, a single listing will appear in the *Address Match Candidates* window, and an orange star will mark the location on the Map View Frame. Click on the address (blue hyperlink - second column) in the table in the *Address Match Candidates* window to zoom to that location in the Map View Frame.

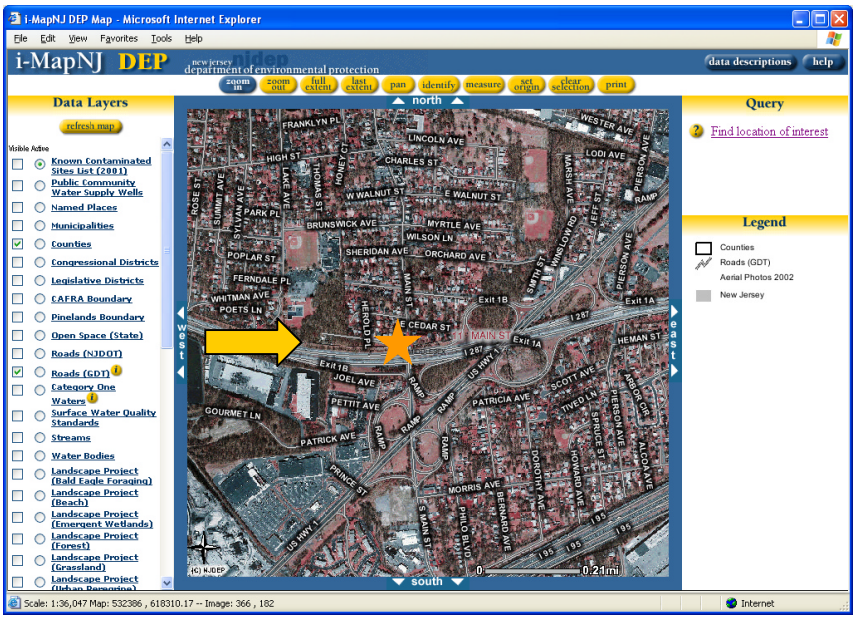

Figure 2.3 Address matched point with aerial imagery.

Sometimes the application will list several address matching possibilities (ranked by score) in the *Address Match Candidates* window and will leave it up to the user to select one of these by clicking on one of the blue underlined hyperlinks. After selecting one address by clicking on the hyperlink, the application will then zoom the Map View Frame to that address location, with the location symbolized with an orange star ★. To the right of the star will be the address.

Not all addresses will match successfully. This is usually due to missing roads or inaccurate coding of address information in the roads layer. Addresses belonging to homes in newer housing developments or in remote rural areas will most likely not match. A user may in this situation try several nearby addresses of older homes to get a match that would be in the neighborhood.

Keep in mind that the address matches are estimated locations, based on an assumed even distribution of addresses along a road segment in the roads layer. Users may see that the marked location can differ greatly from the true location depicted on the aerial photo image.

2.1.2 Find Location of Interest: by Coordinates

The user may also find an area of interest by entering the New Jersey State Plane (NAD83) coordinates of a site.

On the "Find location of interest" pop-up window, choose coordinates by activating the radio button next to Coordinates. The next screen prompts the user for x, y coordinates.

These coordinate values must be in New Jersey State Plane feet and in North American Datum 1983. If not, the user may be taken to a location in New Jersey that does not meet expectations. Enter the coordinates and *click the **find** button to execute the search.* If the coordinates are valid, the point of origin will be set and the Map View Frame will zoom in and indicate the origin with ★ on the digital imagery. Note the coordinate appears next to the site chosen.

To learn more about coordinates, go to http://www.state.nj.us/dep/gis and click on Standards - Mapping and Digital Data Standards (2002) and read NJDEP Mapping and Digital Data Standards (2002).

2.1.3 Find Location of Interest: by County

By activating the **County** radio button on the "**Find location of interest**" pop-up window, the user is presented with a choice of picking one of the 21 counties in New Jersey. Pick one and click the **Find** button to execute the search. The application will zoom to that county and outline the county in yellow.

2.1.4 Find Location of Interest: by Municipality

By activating the **Municipality** radio button on the "**Find location of interest**" pop-up window, the user is presented with a choice of picking one of the 21 counties in New Jersey and a municipality name from the list of all municipalities. If the user first selects a county from the "select a county" pull down list, the municipality pull down will then be populated with only the municipalities in that county. Pick one and click the **Find** button to execute the search. The application will zoom to that municipality and outline the municipality in yellow. The user may continue to use the Tools in the Map Tools Toolbar at the top of the Map View Frame to zoom in and out or pan around the municipality.

Chapter 3

Printing a Map

Any map displayed in the Map View Frame can be sent to a user's printer. Users should consider whether adding (or removing) GIS data layers would improve the map's clarity before printing. If the map's scale is too small and the Aerial Photos from 2002 or 1995/97 are not available for display, consider adding roads and hydrography (Streams and Water Bodies) from the Data Layers List to provide reference data. There are also considerations if you are sending the map to a color or black and white printer. Map data layers with different colored symbols will stand out when the map is printed using a color printer, but may not be easily distinguished when printed in black and white.

The print page is produced in a separate browser window, and it includes the map, the map legend, map scale bar, and map title and north arrow. To print this page, simply click on the web browser window's printer icon, or click on File > Print from the browser's main menu bar.

Chapter 4

An Exercise

4.1 Launching the i-MapNJ Application

1. The user must first launch their web browser. The i-MapNJ application runs more reliably in Microsoft's Internet Explorer 5.x and above.

2. Navigate to the i-MapNJ link at: http://www.nj.gov/dep/gis.

3. Click on the i-MapNJ link on the left side of the page.

4. Select the i-MapNJ DEP application from the list.

5. The i-MapNJ DEP splash page appears.

6. To launch the application, click on the yellow Launch button near the upper left margin of the page.

7. Click on the Query #1 " Find Location of Interest" and select the Municipality choice from the pop-up window. An additional drop down list will then be available for the user to choose a county and then a municipality. Choose your municipality or try Mercer County. Click the **find** button to execute the search.

4.2 Turning on Data Layers

The Data Layers List appears to the left of the Map View Frame. It lists all the layers and highlights in dark blue the currently available GIS layers for display. A GIS data layer may be made visible by clicking in the checkbox next to the layer's name, then clicking on the 

refresh map tool. Many layers can be made visible at the same time. If more layers are desired, use the zoom in tool and more layers will be highlighted.

*Zoom in and turn on several layers from the Data Layers List, and then click the **refresh map** tool at the top of the Data Layers List.*

There can be problems if too many layers are visible. First, the map becomes harder to understand. Second, the more layers that are visible the longer the map will take to draw. So be discriminating when you click on the layers to make them visible. You may turn on any combination you desire.

Only a single layer can be designated as the active layer. By making a layer the active layer, the user then can perform certain actions using some of the map tools (identify) on that layer (use the radio button to make one layer "active").

4.3 Viewing the Legend

In the i-MapNJ DEP application, the legend is always visible in the right column underneath the Query.

4.4 Map Tools

The Map Tools provide some basic GIS functionality to the application.

4.4.1 *Click on the* 

zoom in tool. The user can use the tool in two ways. A single mouse click on the map view frame will zoom the map an incremental amount, centered on the point entered. The user can alternatively define a box using the mouse (click and drag), the limits defining the extent of the zoomed view.

Zoom in on an area repeatedly, until you see the Aerial Photos 2002 highlighted in ***dark blue*** *in the Data Layers List. The photos are automatically visible at large scales.*

Notice as you are zooming in that more data layers become **dark blue** in the layers list and therefore are available to be made visible, however you must turn them on (click on their visible check box) and click on the "refresh map" button to see them in the Map View Frame.

4.4.2 *Click on the* 

print tool. The Print Map window opens. The user may enter a custom title for the map, and the frame provides a Create Print Page button that when clicked on will produce a print page of the map graphics (including title and legend) which can be sent to the user's printer.

4.5 Using the Query

Click on Query button 
. For an address, enter the number, street name and then the zip code and click, Find. If successful the application will present an address results window with a hyperlinked address. The address point location will appear in the View Window with an orange star 
. Click on the hyperlink in the address results window and the application will zoom to the address. Dismiss the address match results window.

Sometimes multiple listings of the address will appear in the address results window. There may be two addresses that are the same in the area. The user may have to click one or two addresses to get the appropriate one, although usually the first address is the best.

If an address is not found, try using a coordinate, or search by county and municipality. When using the municipality option, the application zooms to a municipality and highlights it.

4.6 Printing a Map

1. *If desired, add data layers, making **Roads** and/or **Streams** and **Water Bodies** visible by clicking on the checkboxes next to their names in the Data Layers list.*

   Different layers may be used if more appropriate. Note that if the Map View Frame is displaying too large an area (small scale), the Roads, Streams and Water Bodies layers will not appear in the Data Layers list. If possible, the user may want to zoom to a larger scale.

2. *Click on the **refresh map** button* 

at the top of the Data Layers List. The map will redraw with the added layers.

   When the user is satisfied with the map's appearance they can follow these print steps.

3. *Click on the **print*** 

button on the toolbar. A print map window opens.

4. *Replace the default 'New Jersey Map' title with something that indicates what the map is about.* The title could include wording describing the search used to produce the map result, if appropriate. *Then click on the **Create Print Page** button.*

Chapter 5

Help Information

To access help information and Frequently Asked Questions (FAQs) click on the **Help** 

button from the main toolbar. Help has these as main topics:

- About the Tools
- Address Search
- Coordinate Search
- County Search
- Data Layers
- Find location of Interest
- Frequently Asked Questions
- Legend
- Municipality Search
- Printing Maps
- Tabular Data

Each help topic opens a text file based on the topic that is chosen.

Chapter 6

Frequently Asked Questions

FREQUENTLY ASKED QUESTIONS	ANSWERS
What versions of web browsers work with i-MapNJ DEP?	Later versions of Internet Explorer or Netscape's Communicator work best. Minimum versions are 5.0 and above. This application performs more reliably in Microsoft's Internet Explorer and it is recommended that users view the application using this browser.
Can I select an area of interest by parcel number (lot and block)?	At this point in time, there are only a few counties with digital parcel data. When parcel data becomes available from the counties, it will be integrated into this application.
Why can't I see the C1 streams statewide?	NJDEP has classified each layer in i-MapNJ DEP to be available at specific scales. Because of its level of detail, the Category One Waters layer becomes available only after the user has zoomed in to a municipality or small study area.
Why am I having trouble getting the aerial photos to become visible in the Map View Frame?	The aerial photographs (Aerial Photos 1995/97 and Aerial Photos 2002) are scale dependent and are only available after the user has zoomed in to a municipality or small study area. They also have a minimum scale so they won't be available if you zoom in too far. This application works best with screen resolution of 1024x768 or 1152x864. (Right click on your computer's desktop, select Properties, and then select Settings from the pop-up menu.)
Why aren't all of the layers in the data layers list available?	Most layers will be available for viewing if the user is zoomed to a municipality or small study area (large scale). NJDEP has classified each layer in i-MapNJ DEP to be available at specific scales (scale dependent), so as users zoom in to larger and larger scales, generally more layers become available for display. However, certain layers will become unavailable as you zoom in because more detailed layers replace them.
Why can't I find the address I am interested in?	Achieving success when address matching an entered address is dependent on a few factors. If your address is in a more recently developed area, the roads layer that contains the address range information may not be current enough, preventing a successful match. There can also be address range coding errors in the roads layer If searching for a specific address does not seem to work, try another (if known) close to the original address. With the aid of the orthophotography (aerial photo image) users can often times find their location of interest after recognizing familiar features such as major roads, streams and waterbodies, building structures, parks, etc.

Why does the i- MapNJ DEP application perform differently throughout the day?	The i- MapNJ DEP application is a web application whose performance is subject to a number of factors including the user's connection to the Internet, and the amount of data that is being requested from the application's servers, and how many concurrent requests to those servers are being made by all of the users at a given time.
Can I change the symbols of layers or the order in which the overlay?	No. Unlike GIS desktop applications like ArcView, and Arc Explorer, you can not alter the colors and symbols nor alter the layer drawing order that are presently set in the i- MapNJ DEP.
Can I print the tabular data?	Yes. If you wish to print the tabular data results click your right mouse button on the contents of the table and select print. Some of the tabular data windows also have a print button.
Can I add a GIS data layer that I have stored locally on my computer to the i-MapNJ DEP application?	No.
Why did my map retrieval fail?	Once you execute a search and map retrieval you must let it complete or you will disrupt the transfer of the map. For this reason, it is recommended that users not click on the map or initiate other viewer actions while the transfer is still running.
Why won't the mapped information come into the field of view when I launch i-MapNJ DEP?	Cancel out and try again, or wait for 20 minutes or so and try again. If the application will still not load, email the NJDEP at Contact Us on the Splash Page.
What coordinate system is the information mapped in?	The mapped data in the application is in the New Jersey State Plane Coordinate System (NJSPCS), in units of US Survey Feet, referenced to the North American Datum of 1983 (NAD 83) horizontal geodetic datum.
How can I buffer a C1 stream by 300 feet to determine if it is regulated?	Use the **measure** tool to measure out from a watercourse to 300 feet or any other distance. In the next release, 300 foot buffers to the C1 watercourses will be available.
Where do I get information on the mapped data used in i-MapNJ DEP?	This information is available by clicking on the blue *data descriptions* button above the i-MAPNJ Map tools toolbar. This opens a window that lists all map layers. A brief description of the data is provided when a user clicks on the name of a layer in the data layers list. If a user wants to see further information, they may click on the full metadata button to view FGDC compliant metadata. The user can also get to this information by clicking on a layer name in the Data Layers list.